

09/856966

JC12 Rec'd PCT/PTO 25 MAY 2001

<b>PTO-1449 (Modified)</b>  <b>U.S. DEPARTMENT OF COMMERCE</b> <b>PATENT AND TRADEMARK OFFICE</b>  <b>INFORMATION DISCLOSURE STATEMENT</b> <b>BY APPLICANT</b>	<b>Attorney Docket No.:</b> UNVN.62457	<b>Serial Number: (International)</b> <b>#6</b> PCT/US99/28038 <b>3-7-02</b> <b>DRS</b>
	<b>Applicant:</b> DOWBEN, Peter et al.	
	<b>Filing Date:</b>	<b>Group:</b>

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE
RP	2,867,727	3/7/1956	Welker et al.			
↓	4,957,773	9/18/1990	Spender et al.			
↓	5,216,249	6/1/1993	Jones et al.			
↓	5,468,978	11/21/1995	Dowben			
RP	5,658,834	8/19/1997	Dowben			

## FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

EXAMINER INITIAL	DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

## OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)

RP	T. Kamijoh, and K. Kuriyama, J., Appl. Phys. 51, 1827 (1980).
	C.J. Smith and C.W. Low, J. Appl. Phys. 66, 5102 (1989).
	R. Bacewicz and T.F. Cizelk, Appl. Phys. Lett. 52, 1150 (1988).
	A. Mireshghi et al., IEEE Trans. Nucl. Sci. 39, 635 (1992).
	A. Mireshghi et al., IEEE Trans. Nucl. Sci. 41, 915 (1992).
	D.S. McGregory et al., Nucl. Instr. and Meth. in Phy. Res. A381, 498-501 (1996).
	J. Mazurowski et al., "Characterization of Boron Carbide Films Formed by PECVD," Wide Bandgap Semiconductors, Mat. Res. Soc. Symp. Proc. 242 (1992) 637-642.
	Sunwoo Lee et al., "Characterization of Boron Carbide Thin Films Fabricated by PECVD from Boranes," Journ. Appl. Phys. 72 (1992) 4925-V4933.
	Sunwoo Lee et al., "Conductance in Microcrystalline B <sub>1-x</sub> C <sub>x</sub> /Si Heterojunction Diodes," Mat. Res. Soc. Symp. Proc. 283 (1993) 483-V488.
	Sunwoo Lee and P.A. Dowben, "The Properties of Boron Carbide/Silicon Heterojunction Diodes Fabricated by Plasma-Enhanced Chemical Vapor Deposition," Appl. Phys. A 58 (1994) 223-227.
	Dongjin Byun et al., "Heterojunction Fabrication by Selective Area Chemical Vapor Deposition Induced by Synchrotron Radiation," Appl. Phys. Lett. 64 (1994) 1968-1970.
	J.M. Carpinelli et al., "An STM Study of Molecular Intermediates in the Dissociative Adsorption of closo-1,2-dicarbado-dodecaborane on Si(111)," J. Vac. Sci. Technol. B13 (1995) 1203-1206.
	Dongjin Byun et al., "Comparison of Different Chemical Vapor Deposition Methodologies for the Fabrication of Heterojunction Boron-Carbide Diodes," NanoStructured Materials 5 (1995) 465-473.
RPV	Ahmad A. Amad et al., "Sputter Deposition of High Resistivity Boron Carbide," Thin Solid Films (1998) in press.

09/856966

JC12 Rec'd PCT/PTO 25 MAY 2001

OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication) (CONT'D)	
RP	Seong-Don Hwang et al., "Fabrication of n-tupe Nickel Doped B <sub>5</sub> C <sub>1+8</sub> Homojunction and Heterojunction Diodes," Appl. Phys. Lett. 70 (1997) 1028.
	Seong-Don Hwang et al., "Fabrication of Boron Carbide - Boron Heterojunction Devices," Appl. Phys. Lett. 68 (1996) 1495-1497.
	Seong-Don Hwang et al., "Nickel Doping of Boron Carbide Grown by Plasma Enhanced Chemical Vapor Deposition," J. Vac. Sci. Technol. B14 (1996) 2957-2960.
	Seong-Don Hwang et al., "Nickel Doping of Boron Carbide and Fermi Level Shifts," J. Vac. Sci. Technol. A15 (1997) 854.
	J.C. Lund et al., "Boron Phosphide on Silicon for Radiation Detectors," MRS Symposium Proceedings Vol. 162 (1990) 601.
	Y. Kumashiro et al., "Thermal Neutron Irradiation Experiments on <sup>10</sup> BP single-crystal wafers," J. Less-Common Metals 143 (1988) 71.
	Yu A. Bykovskii et al., Tech. Phys. Lett. 19, 457 (1993).
	H. Kitaguchi et al., IEEE Trans. Nucl. Sci. 43, 1846 (1996).
	D.S. McGregor et al., IEEE Trans. Nucl. Sci. 43, 1357 (1996).
	Seong-Don Hwang et al., "Phosphorus Doping of Boron Carbon Alloys," in: <u>Advances in Microcrystalline and Nanocrystalline Semiconductors</u> , MRS Symposium Proceedings 452 (1997) 1031-1036.
	D.N. McIlroy et al., "The Incorporation of Nickel and Phosphorus Dopants into Boron Carbon Alloy Thin Films," Appl. Phys. A66 (1998).
	S. Adenwalla et al., "A New Class of Boron Based Solid State Neutron Detectors," Aug. 11, 1998.
	A. Tavendale, "Semiconductor Nuclear Radiation Detectors," 17 Am. Rev., Nucl. Sci. 73, 73-96 (1967).
	Y. Kumashiro et al., "Thermal Neutron Irradiation Experiments on <sup>10</sup> BP Single-Crystal Wafers," 143 Journal of the Less-Common Metals 71, 71-75 (1988).
	J.C. Lund et al., "Boron Phosphide on Silicon for Radiation Detectors," 162 Mat. Res. Soc. Symp. Proc. 601, 601-604 (1990).
	A. Mireshghi et al., "Amorphous Silicon Position Sensitive Neutron Detector," 39 IEEE Transactions on Nuclear Science 635, 635-640 (1992).
	Y. Bykovskii et al., "neutron Fluence Sensor Based Boron Carbide," Tech. Phys. Lett., July 1993.
	A. Mireshghi et al., "High efficiency Neutron Sensitive Amorphous Silicon Pixel Detectors," 41 IEEE Trans. on Nuc. Sci. 915, 915-921 (1994).
	D.S. Gregory et al., "Semi-Insulating Bulk GaAs Thermal Neutron Imaging Arrays," 43 IEEE Trans. on Nucl. Sci. 1357, 1357-1364 (1996).
	H. Kitaguchi et al., "Silicon Semiconductor Detectors for Various Nuclear Radiation," 43 IEEE Trans. on Nucl. Sci. 1846, 1846-1850 (1996).
	"The Neutron Materials Program at MURR," pp. 1-2 (Mar. 1996) < <a href="http://www.missouri.edu/~murrwww/neutmat.html">http://www.missouri.edu/~murrwww/neutmat.html</a> >
↓	"More About MURR's Neutron Materials Science Program," pp. 1-2 (April 1996) < <a href="http://www.missouri.edu/~murrwww/neutmat1.html">http://www.missouri.edu/~murrwww/neutmat1.html</a> >
RP	B.J. Van Zeghbroeck, "Semiconductor Fundamentals, Introduction, Structure and Principle of Operation," 12 pages (1997), < <a href="http://ece-www.colorado.edu/~bart/book.html">http://ece-www.colorado.edu/~bart/book.html</a> >
EXAMINER	DATE CONSIDERED
RP	3/20/02
EXAMINER: Initial citation if reference was considered. Draw line through citation if not in conformance to MPEP 609 and not considered. Include copy of this form with next communication to applicant.	



<b>PTO-1449 (Modified)</b>  <b>U.S. DEPARTMENT OF COMMERCE</b> <b>PATENT AND TRADEMARK OFFICE</b>  <b>INFORMATION DISCLOSURE STATEMENT</b> <b>BY APPLICANT</b>	<b>Attorney Docket No.:</b> UNVN.62457	<b>Serial Number:</b> 09/856,966
	<b>Applicant:</b> Peter Dowben, et al.	
	<b>Filing Date:</b> September 6, 2001	<b>Group:</b> 3641

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE
RP	6,440,786	8/27/02	Dowben			
	6,025,611	2/15/00	Dowben			
	6,077,617	6/20/00	Dowben et al.			
	5,164,805	11/17/92	Lee			
	4,980,198	12/25/90	Dowben et al.			
	5,632,669	5/27/97	Azarian et al.			
RP	5,750,231	5/12/98	Ahlert et al.			

RECEIVED

SEP 09 2002

GROUP 3600

## FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

EXAMINER INITIAL	DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
RP	360152069A	8/85	Japan				

## OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)

RP	B.W. Robertson et al., A Class of Boron-Rich Solid-State Neutron Detectors, May 13, 2002, pages 3644-3646, Applied Physics Letter, Volume 80, Number 19.
	Synchrotron Radiation Center Annual Report, 1991, pages 30-31, Synchrotron Radiation News.
	Diode Fabricated by Synchrotron Processing, Fall 1994, pg. 6, Aladdin.
	Robert Sheldon, Physicist Improves Method for Making Semiconductors, November 9, 1994, University of Nebraska-Lincoln News and Information.
	D. Buchenauer, et al., Boron-Based Films for Solid-State Neutron Sensors, March 11-12, 1997, Fifth Scientific Symposium on Room-Temperature Semi-Conductor X-Ray, Gamma-Ray, and Neutron Detectors.
	Monica Norby, Tiny Neutron Detector Developed, August 22, 2002, pages 1, 5, Scarlet.
	New Type of Thermal-Neutron Detector with High Sensitivity and High Speed Response, August 4, 2002, pages 1-2.
	EJ-400 Fast Neutron Detector, August 4, 2002, page 1.
RP	Compact Neutron Detector Pulse Counting Modules, Precision Data Technology, Inc., August 4, 2002, page 1.



	Lightweight Land Mine Detector, Office of Science, U.S. Department of Energy, August 4, 2002, page 1.
	FHT 750, Biorem Neutron Detector, Thermo Eberline ESM, August 4, 2002, page 1.
	Hand-Held Gamma-Neutron Detector, Laurus Systems Inc., undated.
	C.S. Silver et al., Optimization of a LiF Bolometric Neutron Detector, June 24, 2001, pages 1-17.
	Zane W. Bell et al., Neutron and Photon Detectors for Uranium and Plutonium Applications, undated, pages 1-9.
	S. Adenwalla, et al., Boron Carbide/n-Silicon Carbide Heterojunction Diodes, December 24, 2001, pages 4357-4359, Applied Physics Letters, Volume 79, Number 26.
	The Neutron Detector, August 4, 2002, page 1.
	B.W. Robertson, et al., Draft white paper to NA-22 on Initial Processing and Efficiency Enhancement for Semiconducting B-C Neutron Detectors, undated, pages 1-3.
	Martha Stoddard, Tiny Neutron Detector has Security Applications, Lincoln Journal Star, July 27, 2002, pages 1 and 2A.
	Michael O'Connor, UNL Device Seen as Security Boon, Omaha World-Herald, July 27, 2002.
	The Power of Creativity, Omaha World-Herald, July 31, 2002.
	U.S. Develops Neutron to Sniff Out Nuclear Material, Economic Times of India, July 22, 2002.
EXAMINER	DATE CONSIDERED
EXAMINER: Initial citation if reference was considered. Draw line through citation if not in conformance to MPEP 609 and not considered. Include copy of this form with next communication to applicant.	